DERWENT-ACC-NO: 2002-479530
DERWENT-WEEK: 200255

TITLE: Assembly method for assembling components and antennae in Radio Frequency Identification (RFID) devices, uses electrically conductive particles on the bond pads for connection and non-conductive adhesive to hold the chip in place

INVENTOR: BLUM, F A; KOBAR, M ; NEUHAUS, H J ; WERNLE, M E

PATENT-ASSIGNEE: NANOPIERCE TECHNOLOGIES INC[NANON]

PRIORITY-DATA: 2001US-0883012 (June 15, 2001) , 2000US-233561P (September 19, 2000) , 2000US-0684238 (October 5, 2000) , 2001US-0812140 (March 19, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 200225825 A2	March 28, 2002 April 2, 2002	E N/A	073 000	H04B 000/00 H04B 000/00
AU 200193304 A				

DESIGNATED-STATES: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ D E DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE I T KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
WO	N/A	2001WO-US42252	

September 19, 2001
200225825A2 N/A 2001AU-0093304
September 19, 2001
AU 200193304A Based on WO 200225825
N/A
AU 200193304A

INT-CL (IPC): H04B000/00

RELATED-ACC-NO: 2002-382395;2002-507386

ABSTRACTED-PUB-NO: WO 200225825A
BASIC-ABSTRACT: NOVELTY - Electrically conductive, sharp, pointed, hard particles (218) are deposited on either bonding pads (220) of component (210) or corresponding contact lands (214) of substrate (212). Non-conductive adhesive (224) is disposed between electrically conductive contacts so that applying pressure to hold the components together and curing the adhesive results in a permanent electrical connection between the two components.

DETAILED DESCRIPTION - INDEPENDENT CLAIMs are also included for the following:

(a) A Radio Frequency Identification (RFID) device; (A method for making a plurality of electrical components for RFID devices; (An electrical component for use in an RFID device.

USE - For electrical and mechanical connection of semiconductor radio frequency transceiver chips to antenna structures, particularly for Radio Frequency Identification (RFID) device assemblies.

ADVANTAGE - Since the sharp, pointed, hard particles can easily penetrate the conductive contact surfaces, only a low bonding force is needed during and after the chip or chip module is bonded to a substrate, allowing thinner chips or modules to be used to make smaller, more flexible, mobile RFID devices such

as smart cards and smart inlay devices. The cost of manufacture of cards is reduced by elimination of manufacturing steps and the use of less expensive materials. If the chip bond pads are particle-enhanced, it is possible to make a design arrangement so that placement of the chip is not very critical, thus simpler, less expensive manufacturing equipment can be used and operated at higher speeds. Using particle-enhanced contact on the chip carrier substrate or antenna means the chip needs no treatment. If the particle-enhanced contact is formed on the chip, hundreds or thousands of chips in a wafer can be processed in one treatment and chips can be stored in inventory and used with any module or antenna. Because the particle connection provide a low resistance path and the non-conductive adhesives set rapidly, the electrical connection can be tested immediately. The process enables the use of less expensive antennae and coil materials.

DESCRIPTION OF DRAWING(S) - The figure illustrates, in cross section, an electrical component assembly.

Electrical component ((212) Substrate ((214) Contact lands ((218) Conductive hard particles ((220) Conductive bonding pads ((224) Adhesive material. 210

CHOSEN-DRAWING: Dwg.2/17

TITLE-TERMS:
ASSEMBLE METHOD ASSEMBLE COMPONENT ANTENNA RADIO FREQUENCY IDENTIFY DEVICE
ELECTRIC CONDUCTING PARTICLE BOND PAD CONNECT NON CONDUCTING ADHESIVE HOLD CHIP PLACE

DERWENT-CLASS: W02

EPI-CODES: W02-G05A;

SECONDARY-ACC-NO:
Non-CPI Secondary Accession Numbers: N2002-378712

October 24, 2001
200235289A2

INT-CL (IPC): G03G000/00

ABSTRACTED-PUB-NO: WO 200235289A
BASIC-ABSTRACT: NOVELTY - Composition contains a viscous compound and several
electrically conductive hard particles. The hard particles have hardness
greater than opposing electrically conductive surface to be joined in
electrical and mechanical connection to the electrically conductive surface.

DETAILED DESCRIPTION - The composition contains a viscous compound and several
electrically conductive hard particles. The viscous compound adheres to the
electrically conductive surface. The viscous compound comprises a precursor,
and forms electrically conductive solid when cured. At least a portion of the
hard particles form a rough, conductive, sand paper-like surface on the
electrically conductive solid. The hard particles have a hardness greater than
opposing electrically conductive surface to be joined in electrical and
mechanical connection to the electrically conductive surface. An INDEPENDENT
CLAIM is included for method of creating an electrically conductive contact
bump on an electrically conductive surface of an electrical component.

USE - For creating electrically conductive contact bump on electrically
conductive surface of electrical components such as printed circuit board,
flexible circuit tapes, chip carriers, chip modules, smart card contacts and
smart inlay contacts.

ADVANTAGE - The composition is deposited on the electrical contact surfaces by
stencil printing, screen printing or dispensing techniques. The physical

dimensions of the screen or stencil controls the thickness of the deposition
and hence thin deposits are formed easily. Any configuration of contact
surfaces is processed. Since electric current is not needed electrical
connection of multiple contacts are prevented. All hazardous materials are
evaporated and solid or liquid waste is not generated. The electrically
conductive contact bump creating method enhances electrical contact and thermal
transfer between connected contact surfaces. The hard particles pierce through
the opposing contact surface, and hence the surface preparation or cleaning
before connecting the contact surface is avoided. The piercing action of hard
particles removes surface impediments e.g. oxidation, oils, dirt, fluxes. The
thermal conductivity of the hard particles provides electrical conductivity and
low thermal resistance path between the component thermally connected to a
substrate.

DESCRIPTION OF DRAWING(S) - The figure shows a flow diagram showing the steps
involved in stencil or screen printing of the composition on the contact
surfaces.

CHOSEN-DRAWING: Dwg.1/2

TITLE-TERMS:
COMPOSITION ELECTRIC CONDUCTING CONTACT ELECTRIC CONDUCTING SURFACE CONTAIN
ELECTRIC CONDUCTING HARD PARTICLE HARD GREATER OPPOSED ELECTRIC CONDUCTING
SURFACE

DERWENT-CLASS: L03 P84 U11

CPI-CODES: L03-A01A; L03-H04E3;

EPI-CODES: U11-C05G2B; U11-D03B1; U11-D03B3; U11-E02A3;

SECONDARY-ACC-NO:

DERWENT-ACC-NO: 2002-417159
DERWENT-WEEK: 200257

TITLE: Composition for creating electrically conductive contact on
electrically conductive surface, contains several electrically conductive hard
particles having hardness greater than opposing electrically conductive surface

INVENTOR: NEUHAUS, H; ZOU, B

PATENT-ASSIGNEE: NANOPIERCE TECHNOLOGIES INC[NANON]

PRIORITY-DATA: 2000US-243092P (October 24, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
AU 200234097 A	May 6, 2002	N/A	000	G03G 000/00
WO 200235289 A2	May 2, 2002	E	022	G03G 000/00

DESIGNATED-STATES: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ D
E DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK
LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK SL TJ
TM TR TT TZ UA UG US UZ VN YU ZA ZW AT BE CH CY DE DK EA ES FI FR GB GH GM GR I
E IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
AU 200234097A	N/A	2002AU-0034097	October 24, 2001
AU 200234097A	Based on	WO 200235289	N/A
WO	N/A	2001WO-US49997	

DERWENT-ACC-NO: 2000-378073
DERWENT-WEEK: 200263

TITLE: Conductive, heat-activated adhesive film for implanting electrical
modules in cards contains thermoplastic polymer, tackifier, epoxy resin,
metallised particles and hard spacer particles with a high melting point

INVENTOR: PFAFF, R

PATENT-ASSIGNEE: BEIERSDORF AG[BEIE], TESA AG[TESAN]

PRIORITY-DATA: 1998DE-1053805 (November 21, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 6447898 B1	September 10, 2002	N/A	000	B32B 007/12
EP 1002844 A2	May 24, 2000	G	007	C09J 007/00
DE 19853805 A1	May 25, 2000	N/A	000	C09J 007/00

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK N
L PT RO SE SI

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
US 6447898B1	N/A	1999US-0440337	November 15, 1999
EP 1002844A2	N/A	1999EP-0119499	October 1, 1999
DE 19853805A1	N/A	1998DE-1053805	November 21, 1998

INT-CL (IPC): B32B007/12; C09J007/00 ; H01L021/60 ; H01L023/498 ;
H01R004/04 ; H01R013/03 ; H05K003/32

ABSTRACTED-PUB-NO: EP 1002844A
BASIC-ABSTRACT: NOVELTY - Electrically conductive, heat-activated adhesive film based on thermoplastic polymer, tackifying resin, epoxy resin and metallised particles also contains non-deformable spacer particles which do not melt at the bonding temperature of the film.

DETAILED DESCRIPTION - Electrically conductive, thermoplastic, heat-activated adhesive film containing (i) at least 30 wt% thermoplastic polymer, (ii) 5-50 wt% tackifying resin(s), (iii) 5-40 wt% epoxy resins with hardeners and optionally also accelerators, (iv) 0.1-40 wt% metallised particles and (v) 1-10 wt% spacer particles which are not deformable or only deformable with difficulty and which do not melt at the bonding temperature of the film.

USE - For implanting electrical modules in a card provided with a recess, using modules with several contact surfaces on one side (1) and an IC component on the opposite side (2) connected to the contact surfaces by means of electrical conductors and using the adhesive film to bond side 2 of the module with the card; also for structural joints, optionally with subsequent heat-hardening (claimed).

ADVANTAGE - Enables the bonding of carrier elements in data storage media or electronic components with good permanent bonds and electrically conductive contacts. The film shows high cohesion and elasticity at room temperature, high adhesion to chip card materials (PVC, PC, PET or ABS), an activation temperature below the softening point of the card material, good hot-pressing properties to form joints which are thinner than the film, and good electrical conductivity arising from soft particles which are

nevertheless harder than the
adhesive material at bonding temperature and also protected from deformation
and damage by spacer particles. The film can be used on conventional
processing machines for the production of smart cards.

ABSTRACTED-PUB-NO: US 6447898B
EQUIVALENT-ABSTRACTS: NOVELTY - Electrically conductive, heat-activated
adhesive film based on thermoplastic polymer, tackifying resin, epoxy resin and
metallised particles also contains non-deformable spacer particles which do not
melt at the bonding temperature of the film.

DETAILED DESCRIPTION - Electrically conductive, thermoplastic, heat-activated
adhesive film containing (i) at least 30 wt% thermoplastic polymer, (ii) 5-50
wt% tackifying resin(s), (iii) 5-40 wt% epoxy resins with hardeners and
optionally also accelerators, (iv) 0.1-40 wt% metallised particles and (v) 1-10
wt% spacer particles which are not deformable or only deformable with
difficulty and which do not melt at the bonding temperature of the film.

USE - For implanting electrical modules in a card provided with a recess, using
modules with several contact surfaces on one side (1) and an IC component on
the opposite side (2) connected to the contact surfaces by means of electrical
conductors and using the adhesive film to bond side 2 of the module with the
card; also for structural joints, optionally with subsequent heat-hardening
(claimed).

ADVANTAGE - Enables the bonding of carrier elements in data storage media or
electronic components with good permanent bonds and electrically conductive
contacts. The film shows high cohesion and elasticity at room temperature,
high adhesion to chip card materials (PVC, PC, PET or ABS),

an activation
temperature below the softening point of the card material, good hot-pressing
properties to form joints which are thinner than the film, and good electrical
conductivity arising from soft particles which are nevertheless harder than the
adhesive material at bonding temperature and also protected from deformation
and damage by spacer particles. The film can be used on conventional
processing machines for the production of smart cards.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS:
CONDUCTING HEAT ACTIVATE ADHESIVE FILM IMPLANT ELECTRIC MODULE CARD CONTAIN
THERMOPLASTIC POLYMER TACKIFIER EPOXY RESIN METALLISE PARTICLE HARD SPACE
PARTICLE HIGH MELT POINT

DERWENT-CLASS: A18 A28 A85 G03 L03 P73 T01 T04 U11 V04

CPI-CODES: A05-A01E2; A07-A03B; A07-A04A; A08-D01; A08-M05; A08-M09A; A08-M10;
A09-A03; A12-E07C; G03-B02E2; G03-B04; L03-A01A3; L04-C24A;

EPI-CODES: T01-H01B3A; T04-K01; U11-A09; U11-D01A6; U11-D01A7; U11-E02A3;
V04-A06; V04-Q02A3;

ENHANCED-POLYMER-INDEXING:
Polymer Index [1.1]
    018 ; G0033*R G0022 D01 D02 D51 D53 ; H0000 ; H0011*R ; H0317 ;
    S9999 S1285*R ; P1150
Polymer Index [1.2]
    018 ; H0317 ; P0839*R F41 D01 D63 ; S9999 S1285*R
Polymer Index [1.3]
    018 ; H0317 ; P1592*R F77 D01 ; S9999 S1285*R
Polymer Index [1.4]
    018 ; H0317 ; P0635*R F70 D01 ; S9999 S1285*R
Polymer Index [1.5]
    018 ; R00817 G0475 G0260 G0022 D01 D12 D10 D26 D51 D53 D58 D83 F12
    ; R00806 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D84 ; H0022

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    H0011 ; H0135 H0124 ; M9999 M2391 ; S9999 S1285*R ;
P0328  ; P0088
     ; P0124  ; P0135
Polymer Index [1.6]
    018 ; P0464*R D01 D22 D42 F47 ; S9999 S1285*R ; M9999
M2073 ; L9999
    L2391 ; L9999 L2073
Polymer Index [1.7]
    018 ; ND04 ; K9449 ; K9745*R ; Q9999 Q6644*R ; B9999
B3269 B3190
    ; B9999 B5243*R B4740 ; N9999 N7001 ; N9999 N6315 N6268
; B9999
    B3930*R B3838 B3747 ; ND01 ; K9574 K9483 ; K9676*R ;
Q9999 Q7818*R
    ; Q9999 Q7476 Q7330 ; B9999 B5301 B5298 B5276
Polymer Index [1.8]
    018 ; A999 A680 ; A999 A771
Polymer Index [1.9]
    018 ; G2880 D00 Si 4A ; A999 A748 ; S9999 S1456*R ;
B9999 B3792
    B3747 ; B9999 B5607 B5572 ; B9999 B5209 B5185 B4740 ;
39999 B5196
    B5185 B4740
Polymer Index [1.10]
    018 ; A999 A146 ; A999 A157*R ; A999 A102 A077
Polymer Index [1.11]
    018 ; D00 D09 Gm ; R05085 D00 D09 C* 4A ; R01694 D00
F20 O* 6A Si
    4A ; A999 A237 ; S9999 S1514 S1456
Polymer Index [1.12]
    018 ; D00 D09 Gm ; R03080 D00 D09 Au 1B Tr ; S9999
S1456*R ; A999
    A135 ; B9999 B5196 B5185 B4740 ; B9999 B5209 B5185
B4740 ; B9999
    B3827 B3747
Polymer Index [2.1]
    018 ; R00338 G0544 G0022 D01 D12 D10 D51 D53 D58 D69
D82 Cl 7A ;
    H0000 ; S9999 S1581 ; P1796 P1809
Polymer Index [2.2]
    018 ; P0862 P0839 F41 F44 D01 D63 ; S9999 S1581
Polymer Index [2.3]
    018 ; P0884 P1978 P0839 H0293 F41 D01 D11 D10 D19 D18
D31 D50 D63
    D90 E21 E00 ; S9999 S1581
Polymer Index [2.4]
    018 ; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31
D51 D53 D58
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D76 D88 ; R00817 G0475 G0260 G0022 D01 D12 D10 D26 D51 D53 D58 D83
F12 ; R00806 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D84 ; H0033
H0011 ; S9999 S1581 ; P0328 ; P1741 ; P0088 ; P0191
Polymer Index [2.5]
018 ; B9999 B5629 B5572 ; ND01 ; K9574 K9483 ; K9676*R ; Q9999 Q7818*R
; Q9999 Q7476 Q7330 ; B9999 B5301 B5298 B5276
Polymer Index [3.1]
018 ; P0624 P0033 P0044 D01 D18 F30 ; A999 A680 ; A999 A782
Polymer Index [4.1]
018 ; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58
D76 D88 ; H0000 ; S9999 S1456*R ; A999 A135 ; A999 A782 ; P1741
; P1752
Polymer Index [4.2]
018 ; K9552 K9483 ; K9687 K9676 ; B9999 B5425 B5414 B5403 B5276
; K9574 K9483 ; B9999 B5447 B5414 B5403 B5276 ; B9999 B5196 B5185
B4740 ; B9999 B5209 B5185 B4740 ; B9999 B3827 B3747
Polymer Index [6.1]
018 ; P0000 ; A999 A135 ; A999 A782
Polymer Index [6.2]
018 ; K9552 K9483 ; K9574 K9483 ; K9687 K9676 ; K9712 K9676 ; B9999
B3269 B3190 ; Q9999 Q7114*R

SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: C2000-114554
Non-CPI Secondary Accession Numbers: N2000-283968

L Number	Hits	Search Text	DB	Time stamp
1	1832	rfid	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:19
2	0	radio with frequency with identication	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:20
3	3408	radio with frequency with identification	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:48
4	4000	rfid (radio with frequency with identification)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:23
5	2678	(memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:25
6	3	((memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))) and (electrically with conductive with hard with particle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:28
7	3	((memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))) and ((electrically with conductive) same (hard with particle))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:28
8	5	((memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))) and (hard with particle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:47
9	0	(((memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))) and (hard with particle)) not (rfid (radio with frequency with identification))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:29
10	2	(((memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))) and (hard with particle)) not (((memory microprocessor transceiver (electro adj optic) chip die semiconductor) and (rfid (radio with frequency with identification))) and ((electrically with conductive) same (hard with particle)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:35
11	15901	(radio with frequency with identification) (smart with (inlay card))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:49
12	86	((radio with frequency with identification) (smart with (inlay card))) and ((metal hard) with particle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/12/11 20:50